The History of the Poppy and of Opium and Their Expansion in Antiquity in the Eastern Mediterranean Area

by P. G. Kritikos and S. P. Papadaki

Translated from Greek
by George Michalopoulos

From the journal *Bulletin of Narcotics* 19(3) 1967 pp. 17-38.

Note by the *Bulletin*'s Editor:

The following work, which was first published in the *Journal of the Archaeological Society of Athens*, has been reproduced here with some editorial modifications and the omission, for reasons of space, of cumulative archaeological and other evidence, and criticism pertaining to the history of opium in ancient times. The present number carries the first part of the paper which presents research about the poppy and opium among the ancient Greeks as well as among other peoples of the eastern Mediterranean region.

The succeeding number of the *Bulletin* will carry the second part of this paper in which the authors present numismatic evidence about the opium poppy, discuss the etymology of opium, the ways of extracting the raw drug, the methods of taking it, and the symbolic meaning that it came to acquire.

I. Introduction

Footnotes

The poppy plant and its hypnotic qualities were well known in the classical period of ancient Greece and are mentioned by contemporary writers. It was regarded as a magic or poisonous plant and was used in religious ceremonies. At a later date it was also employed in the art of healing.

The ancient Greeks portrayed the divinities Hypnos (Sleep), Nyx (Night), and Thanatos (Death) wreathed with poppies or carrying poppies in their hands. They adorned statues

of Apollo, Asklepios, Pluto, Demeter, Aphrodite, Kybele, Isis and other deities in like manner. Sometimes ears of corn were added to the bunch of poppies.

Poppy-capsules, with or without the addition of ears of corn, are also found on figurines, bas-reliefs, vases, tombstones, coins and jewellery.

Legend has it that Demeter, in despair over the seizure of her daughter Persephone by Pluto, ate poppies in order to fall asleep and forget her grief. According to Ovid, she supplied Triptolemus also with poppies in order to induce sleep.

The poppy became one of the symbols of this goddess. On a basket at Eleusis it is portrayed in combination with ears of corn.

The poppy-head, with or without ears of corn, is found in the hands of statues of various gods of the nether world, and because of the multiplicity of its seeds, it is considered to be a symbol of abundance and fertility.

We propose to refer in detail, in the relevant chapters, to the spread of the poppy over the region primarily under review, down to the first centuries A.D.

The present study consists of an enquiry, from a purely "pharmaco-historical" viewpoint, into matters connected with the poppy. This enquiry has naturally been limited to the data we have been able to glean from a scrutiny of archaeological works available to us, or from an investigation of the findings of archaeological research in Greece.

On various points, more specifically those depending principally on archeology, our conclusions are not definitive and may require further archaeological research.

II. The Poppy and Opium among the Ancient Greeks

A. The Testimony of Classical Texts

The first written record of the poppy is found in Hesiod (eighth century B.C.), who states that in the vicinity of Corinth there was a city named Mekone (Poppy-town): [1]

> "For when the gods and mortal men were divided at Mekone, even then Prometheus was forward to cut up a great ox and set portions before them, trying to beguile the mind of Zeus."

According to commentators on Hesiod, [2] this city received its name from the extensive cultivation of the poppy in the area. Others, however, hold that it was because it was

there that Demeter first discovered the fruit of the poppy, [3] the prehistoric name of this city which previously had been called Aigialeis, Aigiale, Aigialeia or Aigialoi, was subsequently changed to Sikyon.

The poppy is also referred to as growing in the garden of Hekate near Colchis [in Aia], as described in the *Argonautica*: [4]

> "And there were overhanging grasses with roots sunken low,
> And asphodel, and famed and lovely maiden's hair.
> Yew and camomile and the black poppy
> Mighty plants, and white hellebore and monkshood too
> And many other baneful plants that grow upon the ground."

Homer in the *Iliad* [5] also mentions the poppy:

> "And as a poppy which in the garden is weighed down by fruit and vernal showers, droops its head on one side."

In the *Odyssey*, Homer mentions [6] a drug, *nepenthes*, which Helen gave to Telemachus and his comrade to make them forget their grief. She had obtained the drug from the Egyptian Polydamna, wife of Thon:

> "Presently she cast a drug into the wine whereof they drank, a drug to lull all pain and anger, and bring forgetfulness of every sorrow .... Medicines of such virtue and so helpful had the daughter of Zeus, which Polydamna, the wife of Thon, had given her, a woman of Egypt, where earth the grain-giver yields herbs in great plenty, many that are healing in the cup, and many that are baneful."

Theophrastus (372-287 B.C.), [7] referring to this passage, states that there is no plant with the properties attributed to *nepenthes*. It seems that either he was unaware of it or doubted its existence, when he wrote: "they appear to be inventions of the poets." This view is supported by other writers before and after Theophrastus who believed that the word "*nepenthes*" referred allegorically to the blandishments and charms of Helen. [8]

Diodorus Siculus [9] gives added information to the effect that it was reported that in his day the women of Egypt used the drug because only the women of Diospolis had in very ancient times discovered this antidote to anger and grief.

According to Theophrastus, [10] the Mantineian root-doctor, Thrasyas wrote that from the juices of the poppy and hemlock an easy and painless death could be obtained.

---

1. A Minoan goddess, her hair adorned with poppy-capsules (see p. 23)

Hippocrates (B.C. 460-377/355) makes frequent mention of the poppy as being used in medicinal preparations. He distinguishes between the white, fire-red, and black poppy. In regard to its therapeutic qualities he mentions the unripe, [11] ripe, [12] and baked [13] poppy. He also mentions poppy-juice [14] as a hypnotic, narcotic, and styptic drug; also as a cathartic. [15] Finally, he mentions the hypnotic poppy, and the great nutritive property of its seeds.

We also find the poppy mentioned in Aristotle (384-322 B.C.) as a hypnotic drug, [16] but the scientific definition of its species is not given.

Theophrastus also makes frequent mention of the poppy, [17] and lists the following categories: the black or horned poppy, [18] the "flowing" poppy [19] and the Heraklean poppy. [20] These three types of poppy, according to the experts [21] differ from the hypnotic poppy. Nevertheless, it is clearly evident from the above references that when the capsule of the poppy was split, juice flowed and was collected.

As regards the extraction of plant-juice in general, he writes that it is done

> "through the stalks as with the spurge and the lettuce and most plants, or from the roots, or thirdly from the head, as in the case of the poppy. The poppy is the only plant from which the juice is extracted from the head; this is peculiar to it. From the former plants the juice oozes out by itself like tears; this happens with the juice of the tragacanth, which need not be slit. In most cases the juice emanates from cuttings. Sometimes the juice is collected at once in jars, as is done with the juice of the spurge or the poppy. [22] The terms spurge-juice and poppy-juice are used interchangeably when the liquid emanates from plants with many openings."

Herakleides of Pontus (340 B.C.) writing in his work "On Government" [23] about the

"Keian custom" (euthanasia), [24] makes the following statement: "Since the island is healthy and the population lives to a ripe old age, especially the women, they do not wait until they are very old for death to take them, but before they grow weak or disabled in any way, take themselves out of life, some by means of the poppy, others with hemlock." [25]

Theocritus [26] (310-245 B.C.) referring in his *Idylls* to the Temple of Demeter Alois, states that the goddess bore poppies in her hands.

Diokles of Karystos (fourth century B.C.) and Herakleides of Tarantum (third century B.C.) are said to have used opium but this is not definitely confirmed. [27]

Diagoras [28] (third century B.C.), the commentator on Hippocrates, states that Epistratos, one of the founders of the Alexandrian School (304-257 B.C.), disapproved of the use of opium for ear-ache and eye ailments, because it "dulled the sight and is a narcotic", whereas Mnisidemos considered that the only proper use of opium was "by inhalation for inducing sleep, all other uses being harmful." Dioskourides adds that experience proves this to be untrue.

Pliny the Elder says that both Diagoras and Epistratos rejected the use of opium for ear-ache, considering it to be a potent poison.

Andreas of Karystos (third B.C.), [29] physician to Ptolemy Philopator, states that "it is reported that if it was not adulterated those who smeared their eyes with it were blinded ."

In some texts mention is made of the adulteration of the so-called Egyptian opium in Alexandria. This opium is referred to later as Cyrenaic (*opium Cyrenaicum*) and Theban (*opium Thebaicum*). [30]

Nikandros of Kolophon (197-130 B.C.) mentions the poppy [31] and its juice which he calls "the tear-drop of the poppy"; [32] he also describes the effects of the juice.

Celsus (first century A.D.) refers to *lacrymae papaveris* as being used as an antidote, and an hypnotic and pain-removing drug. Scribonius Largus (first century B.C.) distinguishes opium ("a milky juice ") from *mekonion* which was according to him an emanation from the leaves (*Compositiones Medicamentorum*, pp. 21-22. Ed. Helmreich, Leipzig, 1887).

Dioskourides (first century A.D.) mentions several kinds of poppy, as follows:

The "flowing" poppy, so called because "it sheds its flower rapidly."[33] He

adds that this poppy has hypnotic properties.

The cultivated or garden poppy [34] whose seeds are used in baking bread. In this category poppies with an elongated head and white seeds are called pouched.

He also mentions wild poppy with an involuted and elongated capsule and black seed which is called the "jar" poppy, and also by some the "flowing" poppy "because the juice flows from it." Another variety is wilder and more poisonous with a more elongated capsule.

When the leaves and capsules of these poppies are boiled in water, he writes, they induce sleep. As regards the juice he states that "when it is cooled and dried and taken in small quantities like vetch, it is harmless, induces sleep, aids digestion, relieves coughs and stomach troubles; when more of it is taken it plunges one into lethargic sleep and is very injurious." He considers that juice to be most potent which is thick, "heavy in odour, soporific, bitter to the taste."

Furthermore, he mentions the various ways in which the juice can be taken:

Some cut off the leaves and capsules, grind them in a press, rub them in a mortar, and make tablets of them. This product, he says, is called *mekonion* and is less potent than opium.

By slitting the fruit with a small knife "after the dew-drops have become well dried. The knife must be drawn round the crown without piercing the fruit within; then the capsules must be directly slit on the sides near the surface and opened lightly, the juice drop will come forth on to the finger sluggishly but will soon flow freely." [35]

The horned poppy, growing by the sea and wild. [36]

The foaming poppy, called the Herakleian poppy by some. [37]

According to Professor E. Emmanuel, who has made a special study of the Constantinopolitan *Code of Dioskourides*, [38] the "cultivated poppy" corresponds to the *papaver somniferum*, the "wild poppy" to the *papaver orientalis*, the "flowing poppy" to the *papaver hybridum*, the "foaming poppy" to the *gratiola officinalis*, and the "horned poppy" to the *glaucium luteum*.

Galen (second century A.D.) refers in parts of his works to the poppy [39] and to its several forms,[40] as well as to the specific nature of its seeds; [41] he also writes at

length on the juice of the poppy "which physicians are in the habit of calling opium."[42] He also mentions [43] that because the juice flows forth from the poppy it has been called "flowing poppy." In the chapter on the *Antidote of Philon*, he writes that Philon states that the word opium ("*opion*" in Greek) is derived etymologically from the juxtaposition of the exclamatory *O* and *pion* = fat.

Regarding the use of opium,[44] Galen states: "Opium is the strongest of the drugs which numb the senses and induce a deadening sleep; its effects are produced when it is soaked in boiling water, taken up on a flock of wool and used as a suppository; at the same time some can be spread over the forehead and in the nostrils. If it is mixed with a drug that mitigates its power, its effects are greatly reduced."

Athenaios (second century B.C.) also makes frequent mention of the poppy. [45]

Pausanias[46] (second century A.D.) relates that the roof beams of the Philippeion in the Altis were held together by a bronze poppy, and furthermore that in the temple of Aphrodite at Sikyon there was a statue of the goddess seated, executed by Kanachos the Sikyonian, in which she was shown holding a poppy in one hand and an apple in the other.[47]

[RB: some words missing...] of Dioskourides, Athens, 1921. In this are mentioned also corresponding products defined by previous researchers (Coh., Daubenn, Bonnet, Sibthorp). On the products recorded by Dioskourides, research has been undertaken by J. Berendes in his work: *Arzneimittellehre des Dioskourides*, Stuttgart 1902, pp. 397-401.

Polemon, according to Athenaios (XI 478d):

> "Polemon in his treatise on the divine capsule says: 'After that, he performs the ceremony and grasps the objects from the recess and distributes them to those above carrying the vessel around. This vessel is an earthenware vase with many little cups glued within it. These contain sage, white poppies, grains of wheat, grains of barley, peas, vetches, lentils, beans, spelt, oats, fig pudding, honey, oil, wine, milk, unwashed sheep's wool. And he holding it up as though he were carrying the sacred basket tastes the contents' ."

Alex Tschirch [48] places the use of opium in the fourth-third century B.C., and states that, as its Greek name indicates, Roman physicians imported it from Greece or from the Greek colonies.

Apart from the Latin authors already quoted in relation to Greek authors, it is relevant to mention the statement made by Pliny the Elder, in which he says that the black poppy is

hypnotic through the juice produced by the slitting of its bud at the beginning of its flowering. This is Diagoras's interpretation, but according to Jollas the slitting should take place after the flowering, at the bland time of day (three hours after sunrise when there is no longer any dew on the poppy). It is recommended that the notches should be made on the lower part of the capsule and calyx; it is the only type of plant on which the notches are made on the capsule. The juice, as in the case of every plant, is collected on wool, or, if the quantity is small, is broken off with the thumb-nail... It is then allowed to thicken and is kneaded into small loaves that are dried in the shade. This juice not only acts as a soporific, but if taken in large doses induces death through sleep, and it is called opium. Pliny also says that Diagoras and Erasistratos rejected it, forbidding it to be instilled into the eyes because it was a lethal poison and injurious to the eyesight, and that Andreas added that it did not induce blindness immediately, because in Alexandria it was adulterated. But he goes on to say that later, its use was not excluded in the famous preparation called *diakodion* (from the poppy-capsule). He also says that tablets are prepared from powdered seeds, and are taken in milk as an hypnotic. Opium mixed with rose-oil is used to cure headaches; this mixture is also used as eye-drops for the easing of pain. Mixed in woman's milk it is applied to the members of arthritics, as are the leaves also. Mixed with vinegar it is used as a cure for erysipelas and wounds. In any case Pliny does not approve of the use of opium in eye-washes, and definitely not in preparations to reduce fever. He further mentions that the black poppy in wine is prescribed for adbominal ailments, and that by boiling the capsules and leaves an infusion is made called "*mekonion*", whose effects are far milder than those of opium.

Besides the black poppy, Pliny [49] also mentions the *papaver rhaeas* as an intermediate type between the cultivated and the wild poppy, and a third type, the *euphorbia paralias* [50] called "*mecon*" by some and "*paralion*" by others.

Virgil [51] also mentions the poppy frequently, as do many other Latin authors.

The above extracts from classical authors allow the following conclusions to be drawn.

> That the poppy was known from the earliest times and is mentioned in the earliest recorded authors (Homer, Hesiod *et al*.).
>
> It is not precisely established when the poppy-juice began to be used, though it was known in the fourth century B.C.
>
> That two preparations emanating from the poppy existed:
>
> > The juice, extracted by notching the capsule, which from the time of Pliny was known as opium; and

Mekonion, an emanation from plant leaves and fruits of the poppy, used later, and which was less potent than opium. (Under the same name - *mekonion* - according to Hippocrates, the juice was pressed out and made into small tablets.)

That the name opium must derive etymologically from the word *opos* = juice, in spite of Galen's affirmation that it comes from *o* and *pion* = fat (the latter derivation is noted by Philon).

That the notches were at first circular and cut around the crown; and that later they were cut in straight vertical lines in the lowest section of the capsule (Dioskourides and Pliny).

That the poppy, including its leaves, blooms and capsule, was used in making various kinds of preparations, unadulterated or in mixtures, eye-washes, poultices and tablets.

That opium was more potent than *mekonion*.

That the use of opium as an hypnotic drug taken by nasal inhalation of vapours—the most suitable method of inducing sleep—was known, apart from its use through internal, oral consumption and external application (by means of poultices and eye-washes, and as a suppository).

Nec non et lini segetem et Cereale papaver tempus humo tegere et iamdudum incumbere aratris, dum sicca tellure licet, dum nubila pendent (I 212) urunt, Lethaeo perfusa papavera somno. (I 78)

Post, ubi nona suos Aurora ostenderit ortus, inferias Orphei Lethaea papavera mittes et nigram mactabis ovem lucumque revises. (IV 544)

That the seeds of the poppy had great nutritive value.

That the opium and the products of the poppy were hypnotic, pain relieving and narcotic, and that its juice mixed with hemlock induced a speedy and painless death.

B. The Testimony of Archaeological Discoveries

It has already been pointed out that scant data exist concerning the poppy in antiquity and in Greek mythology. They are preserved in the works of a few of the ancient writers (the

Argonautica of Orpheus, Hesiod, *et al*.).

It has also been mentioned that it is only from the ninth century B.C. that Greek written records contain any information on the subject, and this seldom extensive.

More information and enlightenment, covering the period before that century as well as the classical age and subsequent times, are afforded by the considerable archaeological finds resulting from the various excavations throughout Greece.

Prior to the 1950s, very little had been written about the poppy from the standpoint of the present enquiry; it was chiefly mentioned in archaeological observations on its recognition as a symbol or an ornament on statues, vases, coins, etc.

In the sections that follow we deal with findings relating to the poppy that arise out of archaeological research.

Our warmest thanks are due to Professor Sp. Marinatos for the wealth of information with which he has provided us concerning the various stages of our present study (Crete, Kozani, Ithaca, Attica and elsewhere).

We also warmly thank, in addition to those mentioned in special chapters, N. Karouzos, Member of the Academy; Professors N. Kontoleon, Max Robinson, and H. Wedeking; the Curators of Antiquities, N. Verdelis and S. Charitonides; the Directors of the Archaeological Department of Cyprus, P. Dikaios and B. Karagiorgis; as well as the following archaeologists: Miss A. Yiannoulatos, Dr. Chr. Kardara, Miss Char. Barla, Mrs. Rhea Kotionis and Miss K. Papapavlos. To all these persons we are grateful for their willing assistance in the task of compiling the bibliography.

We set forth below our findings in separate chapters, each dealing with a sector of the Hellenic Mediterranean area. We have included comparative information pertaining to the non-Hellenic parts of the eastern Mediterranean, as well as India.

The poppy in Minoan Crete

The surest and most ancient evidence concerning the poppy, the extraction of opium, and the use of both not only in Crete but in the whole Greek area, is that first uncovered in July 1959 as a result of an observation made on the gods of Gazi by Professor P. Kritikos, one of the authors of the present study. This was subsequently communicated to the Academy of Athens.[52]

It refers to one of the five figurines representing the Minoan goddess with "hands

uplifted", which were discovered at Gazi by Professor S. Marinatos.[53]

Of these five figurines, the first and largest, 775 mm in height (not counting the pins which rise 2 cm higher) has been called by Professor Marinatos "The Poppy Goddess, Patroness of Healing", because it bears on the head three movable pins in the likeness of heads of the sleep-inducing poppy (papaver somniferum) (Fig. 1).

The joint author of this study, P. Kritikos, has examined the figurine now in the Museum at Herakleion with a view to determining its pharmacological implications, and has formulated the following conclusions: [54]

> The three pins on the head of the goddess do in fact represent heads of the opium poppy.
>
> The vertical notches in the capsules, which are more deeply coloured, belong to one of the typical forms of poppy used for producing opium.
>
> The carving of the capsules, then executed vertically, is different from the circular carving usual today, or the mixed pattern, circular around the top and then vertical as that of the figurine (Dioskourides, Pliny).
>
> Of especial interest is the artist's rendering of the colouring in the notches: it corresponds with the colour of the dried juice of the poppy.
>
> The Minoan goddess appears to have her eyes closed as though asleep.
>
> Especially impressive are the folds in the cheeks giving a smiling effect, and the lifelessness of the parting of the lips.

Prof. Marinatos writes that other analogous representations of the Minoan goddess had already been found, with snakes wound around her forearms or doves upon her head (the goddess of the snakes; a chthonian or household deity,' and the goddess of the doves: a deity of the sky or of love). The goddess with the uplifted hands is frequently found over a wide area of the prehistoric world and was probably handed down from the Late Minoan III period to that of early Hellenic civilization in which the same goddess is found under various identities.

He expressed the opinion that a tubular vase discovered at the same site, and belonging, according to S. Marinatos [55], to the equipment of the goddess, was used for preparing inhalations of opium. This receptacle had a base and a hole on the sides, and bore a remarkable resemblance to those used in Java in earlier times for the inhalation of the vapours of opium [56].

Figure 2. Left and centre: objects associated with the cult of the poppy goddess and found at the same site; right: a vase front Java for inhaling the fumes of opium.

It is to be noted that the goddesses were found in a room (presumably sacred) enclosed on all sides, doorless and windowless, and obviously approached from above. On the ground were found the remnants of a heap of coal.

From the above observations he concluded that:

> The poppy and the extraction of its opium through a vertical notch was already known at least at the time of the making of the statuette, viz. the Late Minoan III period—that is to say, long before the fourth third centuries B.C., as accepted in the bibliography up to that time.
>
> This manner of notching survived in the East Indies up to the beginning of our century.[57]
>
> The use of opium, for religious purposes at least, was known in Crete in the same period.
>
> The significance of the poppy and of opium was such that to it should be attributed the special posture of the goddess with uplifted hands.
>
> From the other objects found near the goddess (receptacles and coals), it must be inferred that the opium was taken by the inhalation of vapours.
>
> The goddess appears to be in a state of torpor induced by opium; she is in ecstasy, pleasure being manifested on her face, doubtless caused by the beautiful visions aroused in her imagination by the action of the drug. For this reason he proposed that she should be called "the goddess of ecstasy '; and lastly
>
> The passivity of her lips is also a natural effect of opium intoxication.[58]

3. Receptacle for coca leaves discovered in a Peruvian tomb (See footnote 58).

The use of the poppy during the Minoan age was more widespread as is shown by further archaeological discoveries in other parts of the island. Thus, in a grave at Pachyammos in the district of Hierapetra, was found jar, shown in Fig. 4, of the Late Minoan III period (1300-1250 B.C.). On the body of the jar the poppy head is portrayed between the sacred horns and is guarded by birds. This reveals the sacred nature attributed to a the plant by the Minoans. On the lid of the jar is the picture of a bird tearing apart the capsule of the poppy.[59]

---

4. A covered jar with the sacred horns and the poppy motif.

Capsules similarly guarded by two birds are seen on a primitive Attic jar [60] (cf. "The Poppy in Attica").

At Mouliana in Crete [61] there was found in a grave a pin 17 cm in length, the head of which was similar to those of Myceaean origin found in Mycenae, Tiryns, Argos and other Hellenic areas, which, in our opinion, bear the shape of poppy capsules (cf. "The Poppy in Corinth").

The foregoing observations lead to the conclusion that the poppy and opium were known to the Minoans.

Christian Zervos [62] writes that the poppy must be added to the list of the sacred plants of the Minoans because its capsule contains various narcotic substances which they considered as symbols of immortality.

We must note with especial emphasis the original peculiarity of the censers, commented upon by Professor Marinatos,[63] and other objects in the Herakleion Museum yielded by excavations in Crete, which from the nature of their workmanship may be assumed to have been used for taking opium by nasal inhalation.

The poppy in Cyprus

There is no recorded evidence of the spread of the poppy and the use of its juice in Cyprus as far as we can ascertain from the bibliography available to us, while archaeological finds do not give a clear picture of the poppy.

Nevertheless a related study by R. S. Merrillees [64] concerning trade in opium towards the end of the Bronze Age in the Levant [65] is of especial interest.

In examining Cyprian vases discovered in Egypt, [66] which were hand-made (Fig. 5), and whose shape resembled that of the capsule of the opium poppy, he came to the conclusion that these vases were used for carrying pharmaceutical preparations emanating from the poppy.

---

5. A poppy-capsule shown with centre and right, Cypriot vases discovered in Egypt showing resemblance with the form of the capsule.

According to Merrillees, the capsule shape of the vases, in the absence of identifying inscriptions, was indicative of their content; and, since no leather or metal prototypes of these have been discovered, poppy capsules must have served as such for their manufacture.[67] Merrillees concludes that the Cyrpians of the last years of the Bronze Age appeared to be aware of the method of taking opium.

He writes that his view is supported by the dimensions of the vases with bases I and II, analogous to those of the poppy head, and by their chestnut colour corresponding to that

of the notched capsule.

In some vases of the end of the fifteenth century B.C., one notices a change both in the base and in the decoration, which is painted on and not worked in relief. In certain vases of a transitional period both types of decoration are found.

The latter type of decoration, always according to this writer, [68] betokens an improvement in the method of taking opium: by means of an instrument on which many metallic blades were fixed close together, the capsule was notched more speedily and over a greater surface, thus permitting the extraction of as great a quantity of opium as possible. The painted white parallel lines must be the representation of the juice emanating from the corresponding notched surfaces; the juice would be white at first, then would become brown when it dried and thickened and was transformed into opium.

In fact, according to S. Gabra, [69] both the opium poppy and the pomegranate poppy were known to the Egyptians from antiquity.

Merrillees concludes from archaeological and bibliographical data that the original appearance of opium in Egypt in the form of preparations can be traced back to the XVIIIth Dynasty. These preparations were imported from abroad. The shape of the vases indicates that they must have been imported in liquid form, which would be easy owing to the solubility in water or wine of the components of opium.

He further mentions Gabra's comparison of the shape of porcelain containers with that of the poppy capsule, showing that the Egyptians must have been aware of the plant during the period of the XVIIIth Dynasty. [70]

He also relates the early importation in large quantities of vases with circular base I and the subsequent importation in lesser quantities of those with base II, after the Tel-el-Amarna period in which the porcelain copy-vases are found.

He further notes the reference made by Sciaparelli [71] to the effect that in the tomb of the architect Cha, who died during the reign of Amenhotep III, there was found an alabaster bucket containing vegetable oil "*medicato con ferro e con opio*", i.e., a preparation including opium.

Finally, he concludes that during this last period in Egypt the cultivation of the poppy and the extraction of opium must have been known, so that it was no longer necessary to import it.

Merrillees's findings lead to the conclusion that during the period when the vases of category II were being made the capsule notches were no longer vertical but convergent.

We note, however, that both types of notching—the older and the newer—remained in use for the extraction of opium down to our century.

---

6. Vases of the late Cypriot I period (1600-1400 B.C.), inspired by the form of the poppy-capsule.

In addition to these vases of Cyprian origin found in Egypt, a number of capsule-shaped vases have been found in Cyrpus itself as we were able to ascertain during our visit to the island. These were discovered in tombs in the course of excavations undertaken in previous years, and, more recently, by the Cyprus Archaeological Service.

Among these vases of the Late Cyprian I period (1600-1400 B.C.) three are to be found in the Nicosia Museum (Fig. 6).[72]

On some of these vases (*e.g.*, Fig. 6, Vase B), clearly capsule-shape and with a base that is smooth and not pronged, we find two parallel vertical lines in relief; these correspond with the poppy-capsule notches from which the juice pours out. As the juice becomes solid, it appears to stand out in relief over the notch in a manner corresponding with the lines on the vase.

The double line on the neck of the vase shows the joint of the stalk to which the handle of the vase was attached.

Finally, in Cyprus, a necklace was discovered of multicoloured glass beads to which an amulet was attached (cf. "The Poppy at Corinth"). One of the beads shows incisions corresponding to the notches in a poppy capsule.[73] There was also found in Cyprus a considerable number of brooches with a head in the shape of a pomegranate, according to Jacobsthal.[74] These brooches are attributable to the Middle Bronze Age:

We wonder whether this case is not similar to that of the Ephesus brooches (cf. "The Poppy in Asia Minor and Eastern Thrace"), and whether the shape thought to be that of a pomegranate is not in reality intended to represent that of a poppy capsule.

In any case, we draw the attention of specialists to the similarity in shape of the Cyprian

vases described, which are approximately of the same period.

The poppy in Mycenae

Correlatively to the Minoan civilization, the Mycenaean civilization spread over many areas of Greece and was carried to Crete and Cyprus after the arrival there of the Mycenaeans. Many similarities are found in the various symbols and manifestations of a religious nature in the two civilizations. Archaeological research has shown that the opium poppy was also known at Mycenae, and the most beautiful representation of its capsule appears on the famous golden signet-ring discovered on the Acropolis at Mycenae [75] (Fig. 7).

On this ring a seated woman receives an offering of three poppy capsules. According to Nilsson, this must be a goddess; behind her a small figure stands gathering fruit from the sacred tree. This shows that the goddess is associated with the worship of trees, "a goddess of tree-worship, therefore of nature and fertility, sitting beneath the tree itself", according to Professor Marinates. The first "worshipper" offers the poppy capsules, the second brings lilies, while the third bring flowers. Then Mioan symbols (the palladium and the double axe) also appear in the composition.

---

7. The top of a signet-ring from Mycenae showing poppy-capsules in the centre.

The royal tomb III at Mycenae also yielded brooch pins (sixteenth century B.C.) of especial interest since their head is capsule-shaped. Jacobsthal [76] describes such a pin (Fig. 8), 27.7 cm in length, found in grave III.

---

8. A brooch pin from the royal tomb III in Mycenae.

According to him the head probably represents an apple. It is made of cloudy-brown

mountain crystal and is grooved. This pin is also described by Karo.[77]

In our opinion, this is a pin with a poppy-capsule head from which the star-shaped crown is missing, probably as a result of oxydation. The notches for the extraction of opium are dearly marked; an apple obviously would not be grooved. Similar to this pinhead is that of a silver pin [78] (Fig. 9) which also has vertical slits. Another was found at Vaphio in Laconia (Fig. 10), and the discovery was published by Tsountas.[79] Its head not only represents the capsule of a poppy but bears the characteristic notches for opium extraction

According to some archaeologists,[80] these pins because of their great length do not conform to the usual type of pin used for clothing or hairdressing. We wonder whether they may not have been needles used in the process of smoking opium.

A bone amulet found on the Acropolis at Mycenae and exhibited at the Archaeological Museum there (No. 2671), is a characteristic representation of a grooved poppy-capsule. Similar to this are amulets displayed as exhibits Nos. T516 et T518 in the same museum.

---

9. Pin-head in silver.

---

10. A brooch-pin from Vaphio

Furthermore, we should like to draw the attention of the experts to the similarity in shape and size of certain small containers (*aryballoi*). These are usually believed to have been used for perfume. We suggest, however, the possibility that preparations of opium may have been placed in them, particularly if we accept Merrillees's theory about capsule-

shaped vases, which we believe to be correct.

The discovery of more containers, the contents of which might by modern methods be identified on the basis of an infinitesimal quantity of substance, could possibly shed light on this question. It is a known fact that a similar vessel containing oil mixed with opium was found in Egypt (cf. "The Poppy in Egypt").

From what precedes, it may be deduced that the poppy and its incision for the extraction of opium were known at Mycenae at least in the sixteenth century B.C. (Late Mycenaean I Age).

The poppy at Argos and Tiryns

A number of objects discovered by archaeologists and pertaining to various periods of Argive history disclose ornaments that may represent a poppy-capsule. For example, clay figurines of Tirynthian and Argive goddesses have been found which are reminiscent of those of Corinth and which appear to us to be fashioned in the shape of a capsule.

Similarly, figurines of the First Archaic (Protoarchaic) Period have been found in which the goddess holds a round fruit. This, according to Waldstein, [81] may represent an apple; we do not believe this definitely proved. It is true that Pausanias states that Hera held a pomegranate in her hand, but the same author reports that at Sikyon there was a statue of Aphrodite by Kanachos in which the goddess was represented as holding a poppy.[82] It is therefore quite possible that in some of the figurines the round fruit actually represents a poppy capsule.

Charitinides, writing about the pomegranate, believes that in the case of many figurines there is a confusion between that fruit and the poppy-capsule, and states that in the Museum at Argos there are three intact late-geometric pomegranates with a wrinkled surface.

Also at Argos were found capsule-shaped vases similar to those at Mycenae, as well as small alabaster or clay containers.

The Poppy and Opium in Antiquity (Eastern Mediterranean Area)

Especial interest attaches to the pins, many of which are to be seen in the Museum at Argos, and whose heads may be assumed to be in the shape of poppy capsules. In some of these the body of the capsule is composed of semi-precious stones, as in those referred to by Waldstein;[83] they are comparable to those at Mycenae, Tiryns and

Corinth.

The contact indicated by these archaeological findings between Egypt, Cyprus, Crete, and cities of ancient Greece (Mycenae, Argos, Eleusis, etc.) is worthy of note. This is made clear by the findings in many predominantly Hellenic areas. Thus at Eleusis, Argos, and elsewhere, scarabs have been found bearing the name of Thutmosis III. The origin of some of these is not clearly established. They may have come directly from Egypt or been carried by Phoenicians to Egypt and thence exported to Greece.

The poppy at Tegea

The poppy has been found in excavations at Tegea. On a sheet of bronze in the shape of a tray a nude is shown (Fig.11) holding a fruit in her hand.

---

11. A platter from Tegea showing a nude figure holding the poppy.

According to Dugas [84] and Oikonomos,[85] this is a pomegranate; Mueller [86] believes it to be the capsule of the hypnotic poppy.

According to Klinz,[87] the tray belongs to the seventh century B.C.; Dugas [88] thinks it belongs to the geometric period. Riis [89] considers it is of Baeotian origin.

In our view, the fruit represents the capsule of a poppy, because of the presence of a circular line in the middle of the capsule corresponding to one of the methods of incising the capsule in order to obtain opium.

In this area were also found pins similar to those discovered at Corinth, Perachora,

.Aegina and Tenos.[90]

At Tegea weights were discovered whose shape according to Dugas [91] was that of a pomegranate. We believe that many of them (Fig. 12) are clearly in the shape of the poppy-capsule. Possibly they were used for weighing opium.

12.Weights in the form of the poppy-capsule discovered in Tegea.

The poppy at Sparta

From the texts we already know that Helen of Sparta made use of the nepenthes drug [92] which we believe to have been a concoction of opium.

There are indications in Sparta to prove that the poppy was known there in antiquity.

Dawkins[93] mentions many findings from the sanctuary of Artemis Orthia at Sparta which, when compared with the objects discovered in Corinth, are, in our view, related to the poppy-capsule.

In the pendant shown in Fig. 13 [94] hanging objects appear which, we believe, represent capsules, corresponding to similar objects found in Mycenae and Egypt. The bone pendants [95] shown in Fig. 14, which were obviously worn around the neck, also seem to represent poppy-capsules.

---

13. A pendant adorned with poppy-capsules.

14. Pendants in the form of the poppy-capsule.

Furthermore, seventh century B.C. bronze pendants [96] bear the shape of poppy-capsules in direct contrast to that of a pomegranate flower displayed next to them (Fig. 15).

15. A pendant in the form of a poppy-capsule (left) shown with another in the form of a pomegranate blossom (centre) and right, the latter flower itself.

Certain discoveries made during the excavations in 1909 at the Menelaeion in Sparta, reputedly the palace of Menelaus and Helen, are of particular interest in an inquiry into the history of the poppy. They were as follows:

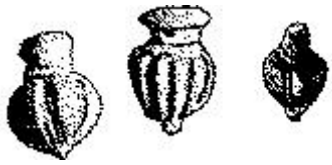
> Bronze pendants in the shape of a pomegranate bud or of a poppy seed, according to Thompson [97] shown in Fig. 16. We consider them to be clearly representations of poppy-heads, particularly since they bear the characteristic notches for the extraction of opium.

A silver-gilt pendant [98] in the shape of a poppy head with slits on it.

All of these pendants were dedicatory offerings and correspond to those found in the sanctuary of Artemis Orthia.

---

16. Pendants from Sparta.



We also note the existence of many pins [99] in Vaphio in Laconia, in the sanctuary of Artemis Orthia at Sparta (Fig. 17 right), and in the temple of Aphaia at Aegina (Fig. 17 left). By some these pin-heads are presumed, in our view wrongly, to represent pomegranate buds.

From the texts already quoted we know that there was in the vicinity of Corinth an ancient city called Mekone by Hesiod, and later named Sikyon. According to some commentators on Hesiod, [100] the city owed its name to the extensive cultivation of the poppy near its site. Others consider that it was called Mekone because Demeter there first dicovered the fruit of the poppy.

Professor Marinatos [101] mentions that a local legend held that Demeter presented the poppies in person to the city.

---

17. Left and right, pins from Aegina and Sparta respectively.

The only definite information given by a classical author is that in Pausanias [102] according to which a statue of Aphrodite stood in the temple of the goddess at Sikyon; in one hand the goddess held a poppy, in the other an apple.

Whilst the texts give a very poor yield, the objects unearthed by the archaelogist's spade in the region have brought forth a rich harvest of information which complements and even confirms or explains what is gleaned from the texts.

Many reproductions of the poppy-capsule in clay have been found and are now deposited in the Museum at Old Corinth. A typical reproduction of the capsule is that found by Verdelis [103] at the sanctuary of Solygeia near Galataki (Fig. 18). This is beautifully fashioned, and does not bear notches. Verdelis considers it to have been an offering connected with the worship of Hera.

---

18. Poppy capsule in clay.

It is 6.5 cm in length including the stalk and 3 cm in diameter, and clearly shows the body of the capsule and the point (Dioskourides's asterisk), as well as the stalk with its "knee." The appearance of the capsule when viewed from above, as well as that of capsules in Fig. 19, reminds us of the pins on the shoulders of goddesses in figurines of various areas, especially noticeable in the figurines from Galataki. Fig. 19 (a) is an offertory plate with a clay capsule-shaped protuberance in the centre.

---

19. An offertory plate (a), and b and c, fragments from other such ware.

The poppy in Corinth and its environs (Sikyon, Perachora, Corinthian Gulf)

The spread of the poppy in this area is especially interesting. There are numerous archaeological finds on which the poppy-capsule appears in various forms.

---

20. Objects from Palaimon, the one on the right being in stone and the ones shown in the two other pictures being in metal.

Fig. 20 right in stone is the object discovered in 1955 by Professor Oscar Broneer at the sanctuary of Palaimon in Isthmia (diameter 92 mm; in Corinth Museum, No. I.M. 1006), and also the metal object (Fig. 20 left), represents a shepherd or peasant holding the fruit of the poppy in his right hand.[104]

The object shown in Fig. 20 is probably a weight and it resembles the poppy-capsule. Found in the same area (to the north of the Temple of Poseidon in Isthmia) on 28 May 1954 (Corinth Museum, No. I.M. 74).

---

21. Bronze statuette from ancient Pheneos holding the fruit of the poppy in its hand.

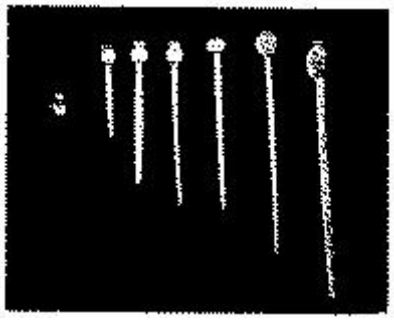
In the area of ancient Pheneos the bronze statuette shown in Fig. 21 was found two years ago and is now in the Museum at Nauplion. According to N. Verdelis, Keeper of Antiquities in Attica, who discovered it, it represents a shepherd or peasant holding the fruit of the poppy in this right hand.[104]

Throughout the Peloponnese, and also in other areas of Greece, a great quantity of pins has been found, the heads of which are characteristically capsule-shaped and sometimes notched horizontally or vertically for the extraction of opium. Some of the more representative of these are shown in Fig. 22.[105] All these pins are made of bone and date from the second and first centuries B.C. and there are many others from other sites.

---

22. Pins made of bone found in many parts of Greece with the pinheads in the form of

the poppy-capsule.



Gabra[106] notes that there is a relationship between the shape of the pendants and beads that have been found in great number, and that of the poppy-capsule. Such notched pendants and beads have also been found at Mycenae.

Bone or brass capsule-shaped pendants [107] have also been found. Payne describes one of these as having the shape of an inverted poppy-capsule.[108] A similar one was discovered at Lindos. He mentions that similar pendants have been discovered in Samos; a report of these discoveries has not yet been published. Many of the pendants are of the seventh century B.C.

---

23. Vases in the form of poppy-capsules discovered near Corinth.

A considerable number of capsule-shaped vases, if Merrillees's view is finally accepted—a view with which we agree—has been unearthed during the excavations on the shores of the Gulf of Corinth. Fig. 23 shows some of the more representative vases, a few of which also have notches.

It may be concluded that:

> In the whole Corinthian Gulf area, from Sikyon to Perachora, the poppy was known and greatly honoured as early as the ninth century B.C.
>
> Its capsule is found as an offering in the form of clay reproductions or capsule-shaped balls.

Its capsule is found reproduced on brooches, pendants, necklaces or beads adorning images of gods.

Pins with heads which are clearly capsule-shaped are found in large numbers.

There are vases of various substances in the shape of the poppy-capsule.

The Poppy in Attica and Baeotia

From the texts as well as from archaeological finds, we see that the poppy was known in this area, especially during the last centuries B.C. Of particular interest is the statue of Demeter found in the ancient Agora in 1907, on which Oikonomos reported [109] and which dates from the end of the fifth or the beginning of the fourth century B.C. Demeter is seated and, according to Oikonomos, is holding in her hand an ear of wheat and a poppy (Fig. 24).

---

24. A statue of the goddess Demeter discoverd at the agora in Athens; the detail shows her clutching an opium poppy with an ear of wheat.

---

25. An early Attic jar with the poppy motif in its decoration.

A similar statue of the goddess with ears of wheat and poppy-capsules is to be seen in Copenhagen, another at the Capitol, and others in the Chiaramonti Museum of the Vatican and in the Archaeological Museum at Athens. [110]

During the Agora excavations a proto-Attic pitcher was discovered [111] on which two birds are portrayed; between them is drawn a circle of spokes at the end of which are fruit which seem to represent poppy-capsules (Fig. 25).

Eleusis

Eleusis, in Attica, was more especially set apart for the worhsip of Demeter, goddess of agriculture, and her daughter, Persephone.

On the famous basket on the head of the Caryatid of the Small Propylaia (Fig. 26) ears of wheat and the heads of poppies—the two principal symbols of the worship of Demeter—are carved.

From the foregoing it is clear that the poppy and the wheat-ear were both attributes of the divinities of Eleusis. Many consider that both, appearing on statues and various other representations, were symbols of plenty.

---

26. The Caryatid of Eleusis balancing a basket, decorated with poppy-capsules, on her head.

The Poppy in Macedonia

The poppy was likewise not unknown in this area. Thus:

> In the Hippocratic period the poppy was known to the Macedonians, and its existence is mentioned as an ornament on the rooftop of the Philippeion erected at Olympia in honour of Philip.[112]
>
> Its hypnotic properties were known at this time as is mentioned by the tutor of Alexander the Great, Aristotle.[113]
>
> A small bronze object found at Kozani and now in the Museum in that town - obviously of local origin and of the geometric period (700 B.C.) [114]— confirms the fact that the poppy [115] was known in the area (Fig. 27). The spherical section of the object presents a resemblance to the poppy-head, bearing the characteristic notches for opium extraction.

---

27. A bronze object from Kozani with an anthropomorphic top and the base in the shape of a notched poppy-capsule.

The whole appearance of the object gives the impression of a direct connexion between it and the therapeutic action of the poppy. The figure seated on the capsuleshaped base is either pointing to or is holding his head with his left hand. It is possible, we think, that this work suggests the well-known pain-relieving and hypnotic effect of the drug.

The poppy in the Aegean Islands

We have already seen from the texts that the poppy was, according to some writers, used as a means of euthanasia (the Keian custom), and also that hemlock with poppy produces a swift and painless death. Beyond this, there is, as far as we know, no mention in the classical texts of the use of the poppy in the Aegean Islands.

The archaeological excavations at the site of the Heraion in Samos have yielded interesting results in that among the finds the poppy is represented.

Professor E. Homman Wedeking was kind enough to inform us by letter that at the Heraion of Samos a number of reproductions of the poppy have been found, in clay and in ivory. Publication of these finds has not yet been made but he has sent us the two photographs in Fig. 28 of objects of the seventh century B.C. typical of six or seven similar objects now in the Archaeological Museum at Vathy, Samos (Nos. 6059, 6062).

We believe that some of these were probably buttons on a peplos and others ornaments of a sceptre.

Poppy heads from the Heraion of Samos made in clay and ivory.

In Rhodes we find pins of the Mycenaean and Argive type previously described, such as that discovered in a grave at Ialysos [116] attributable to the Late Minoan Period.

The poppy in Asia Minor and Eastern Thrace

In these areas also we find the poppy portrayed on archaeological remains, especially pins which seem to represent the poppy capsule. In some there are characteristic notches to represent extraction of opium.

III. The Poppy and Opium among Other People of the Eastern Mediterranean and in India

To complement our present account of the poppy and opium among the Greeks we shall refer briefly to the spread of these among other peoples of the eastern Mediterranean.

The Egyptians, the Sumerians and their successors, the Assyrians, the Hebrews, the Phoenicians and the Persians developed considerable civilizations during this period.

In fact, the Phoenicians with their vessels contributed greatly, with other maritime peoples, to the communication and exchange of views in this area.

The poppy in Egypt

Older writers state that among the primitive Egyptians and Semites the poppy and its culture were either unknown or had remained unobserved, [117] and that the poppy was introduced from abroad and particularly from Asia Minor.

In the most ancient monuments or wall inscriptions of the earliest temples of those

peoples, the flower, the fruit and the seeds of the poppy were absent.[118]

Schweinfurth[119] holds that the poppy was not an ancient Egyptian plant but was introduced into Egypt shortly before the Roman era.

From the texts it may be deduced that the hypnotic poppy was introduced and cultivated in Egypt and Cyrenaica at a later period. There is fuller information about the cultivation of the poppy and the preparation of opium in Egyptian Thebes—whence the term Theban opium—about the time of the birth of Christ.

Galen writes that the preparation of opium had been taught to mortals by the Egyptian god Thoth, who in later years was called Hermes Trismegistos.

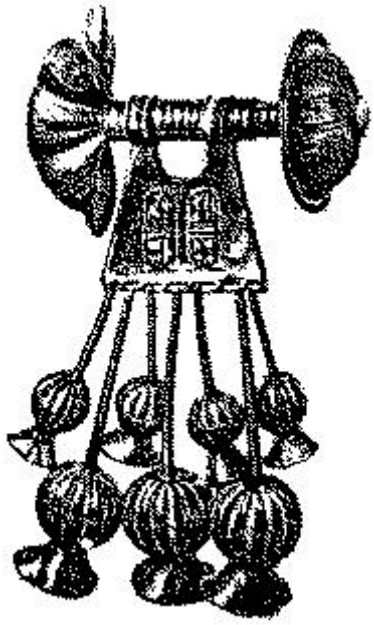
On the other hand, Gabra has shown the exact contrary, namely that the poppy and opium were known much earlier; he bases his view on the following:

> In a tomb of the XVIIIth Dynasty an oleaginous ointment containing morphine was found.[120]
>
> During Davis's excavations at Biban-el-Molouk in 1908 two ear-rings (Fig. 29) were found which, accord ing to Maspéro, represent pomegranates,[121] while according to Gabra they represent poppy-capsules. In the reasons he gives for so defining them, Gabra states that the grooves appear to be identical with the notches of the poppy-capsule.

Davis further mentions the discovery at Tel-el-Amarna of blue porcelain vases in the shape of a poppy-capsule, and concludes that the plant was of especial economic importance to Egypt in the Greco-Roman period, as is deduced from the writings about the garden poppy of Dioskourides, Theophrastus, Pliny the Elder and Serapis.

Moreover, mention is made of opium-seeds in the Greco-Roman papyri of Oxyrhynchus and Zeno, while in the Petrie III papyrus it is asserted that the cultiva tion of the poppy and other plants was spread over the whole area.

A pendant discovered at Biban-el-Molouk with a hanging cluster of poppy-capsules.



According to some authorities, the poppy-juice is mentioned under the name *seter-seref* in the Ebers papyrus (1500 B.C.).

According to Gabra,[122] the poppy is there referred to as *shepenn* [123] and its description coincides with that of the later Coptic medical papyrus, known as the Chassinat papyrus in which, as Gabra states, opium is mentioned twenty-two times as being used principally for external treatment in the form of eye-drops, ointments, or powders.

In his conclusions, Gabra [124] mentions:

> That the use of the products of the poppy was continued through the centuries and that the term opium, as has been previously stated, is found in the Greco-Roman period and was adopted by the Copts;
>
> That opium was used in antiquity as a pain-reliever and narcotic medically, as it is used today; and
>
> That opium was very well known and indeed a famous drug in Egypt, where many districts were noted for its preparation.

Merillees's study previously mentioned (cf. "the poppy in Cyprus") completes the history of the poppy and opium in Egypt.

As regards the *Papaver Rhoeas*, Gabra states that it is found on tombs and monuments of the XVIIIth to the XXIInd Dynasties. [125] On mummies of the XXIst Dynasty we

find flowers and leaves of this poppy, and poppy flowers have been identified in the garlands of the Princess Nsikounsu.

The poppy and the Sumerians

The first and most ancient testimony concerning the poppy is given on a small tablet of white clay found about fifty years ago during excavations at Nippur undertaken by the University of Pennsylvania Archaeological Mission. Nippur was the spiritual centre of the Sumerians [126] and lies to the south of modern Baghdad.

The tablet is inscribed in cuneiform script.

Among these tablets, one, deciphered by Samuel Noah Kramer and Martin Leve, is considered to be the most ancient pharmacopoeia in existence. (Samuel Noah Kramer, "First Pharmacopoeia in Man's Recorded History", *American Journal of Pharmacy* 126, 1954, pp. 76-84).

Harry G. Anslinger and William F. Tompkins [127] report that on the clay tablets of the Sumerians it is written that the juice of the poppy was collected very early in the morning, which is evidence that the Sumerians cultivated the poppy in order to extract opium 5000 years B.C., and also that they called it "*gil*" which means happiness or joy, and that this term is still used for opium in certain parts of the world.

These authors are of the opinion that the Babylonians, inheritors of the Sumerian civilization, were those who, with their expanding empire, extended their knowledge of the properties of the poppy eastwards to Persia and westwards to Egypt where its use as a curative drug for human diseases was known very early, from the year 1500 B.C.

Terry[128] states that he was informed by Professor R. Dougherty, Curator of the Babylonian Collection at Yale University, that opium must have been known to the Sumerians because they had an ideogram, " *Hul Gil* ", corresponding to this drug.

We believe that these writers, possibly through a typographical error, state that opium was already known in 5000 B.C., whereas the Sumerian State flourished in the third millenium B.C., that is, about 5000 years before our time. The written records discovered are of the end of the third millenium B.C.

The poppy, the Babylonians and the Assyrians

Reginald C. Thompson [129] has no doubt that opium was known to the Assyrians in the seventh century B.C., and maintains that it was called "*Hul Gil*" and not, as was formerly thought, "stink cucumber."

It appears that most of these tablets were written about 1700 B.C. A few are more ancient.

The tablet in question includes a considerable number of prescriptions collected by a Sumerian physician, and it is reported that it was written around the end of the third millenium B.C.

From 2225 B.C. the Sumerian territory was a part of the land of the Babylonians (The Assyrio-Babylonian State, which, in 607 B.C., was subjugated by the Persians).

He reinforces this view with the following quotation from a cuneiform tablet: "Early in the morning old women, boys and girls collect the juice, scraping it off the notches (of the poppy-capsule) with a small iron blade, and place it within a clay receptacle." He adds: "It seems that nothing has changed in the method of collecting opium."

Glenn Sonnedecker [130] mentions that the "*Hul Gil*" is found in earlier Sumerian tablets of the fourth millenium B.C., the expression meaning "plant of joy", while Raymond P. Dougherty [131] believes that it denotes opium.

Terry [132] shares Thompson's view and adds that in the *Assyrian Herbal* the term *Arat. Pa. Pa.* occurs. This, according to Thompson, is the Assyrian name for the juice of the poppy and suggests that it may be the etymological origin of the Latin *papaver*.

The Eastern goddess Nisaba is often shown in Assyria and Babylon with poppies growing out of her shoulders. According to Professor Marinatos, [133] this deity survived until the archaic period of the Baeotian jars.

The poppy and the Persians

Neligan [134] states that "No great imagination is required to suppose that in the Sumerian or the early Babylonian period some neighbouring peoples living in the future land of the Persians were aware of so amazing a drug as opium. It is more than likely that the ancient Persians inherited this from Assyria or Babylon, just as they acquired a great part of their civilization by the conquest of those states. Yet it is only in the sixth century B.C., that opium is mentioned in any Persian text ."

In any case the cultivation of the poppy was very ancient. Opium was called theriac (*malideh* or *afium*) by the Persians.[135]

The poppy and the Hebrews

The Hebrews, as a people living in an area where the poppy and its juice were known from remote antiquity, cannot but have been cognizant of their uses.

Many studies have been made on the plants of the area, and are included in certain books of the Bible, and particularly in the Talmud.

Professor Marti [136] of Switzerland has studied these and avers that among them are included the *papaver somniferum* or *setigerum* (seeds and oil).

Rindley [137] (1900) mentions various plants from the Bible and among them "*rosch*" (head), which he interprets as being the capsule of the *papaver setigerum*. This, according to him, was the gall mixed with vinegar which the Hebrews gave to Christ on the cross in order to alleviate His suffering.

Furthermore Miss Walker [138] states that the gall which was added to the vinegar was the juice of the hypnotic poppy, called *rosch* in Hebrew.

The poppy in India

The poppy was known in Macedonia before the time of Alexander the Great (fourth century B.C.) and thus Bergmarck's [139] assertion that the method of extracting the juice was learned by the Greeks from Indian sources is incorrect. On the contrary, we maintain that Alexander the Great took with him to India the drugs which he used for the needs of his army. This is recorded by the chroniclers of the time. It could be that knowledge pertaining to opium was carried to India by Alexander—not the converse. But there is no proof that opium was used in India during this period, and perhaps a special study should be made on the earliest origins of the cultivation of the poppy in India.

In the Far East [140] (China and Japan), the poppy is said to have been introduced in the seventh-eighth century A.D., whereas in India it seems to have been introduced much later, via Persia and Arabia. The texts show that it was unknown there in A.D. 671-695. [141]

The information gathered from the texts to the effect that opium was not known in India

before the seventh century A.D., does not preclude the possibility of its having been known earlier, since Greek medicine in the third century B.C., has acquired many Indian drugs, and conversely many Greek drugs had been introduced to Indian physicians. Thus, opium, which in the time of Hippocrates was known both in Greece and in Egypt, might well have reached India.

The History of the Poppy and of Opium and Their Expansion in Antiquity in the Eastern Mediterranean Area

by P. G. Kritikos and S. P. Papadaki

---

1. Hesiod, *Theogony*, 11.535-537.

2. Hesiod, *Theogony*, 11.535-537. Interpretation by Karl Sittl in the edition of the Zographeios Hellenic Library (Constantinople, 1889).

3. *The Great Etymological Dictionary* under "*mekon*" (poppy). According to Stephanos Byzantios, under "Sikyon" Mekone was also called Telchinia.

4. Joh. Gottlob Schneider, Orpheus's Argonautica, 1803, 11.914-915.

5. Iliad IX, 306-307.

6. Odyssey X, 220-232.

7. Theophrastus, *History of Plants*, IX 15. 1.

8. E. Emmanuel, "Homer's nepenthes", *Minutes of the Academy of Athens*, 1952, pp. 541-553.

9. Diodorus Siculus, I 97. 30: "For the drug *nepenthes*, which the poet says Helen received from the Egyptians of Thebes and specifically from Polydamna, wife of Thon, appears to have been genuinely ascertained; for even now the women of that city are said to use it for its aforementioned powers; from ancient times only the women of Diospolis were said to have found a drug against anger and grief, and Thebes and Diospolis were the same city."

10. Theophrastus, *op. cit.*, IX 9. 16. 8 ... "which produced an easy and painless end; he used the juices of hemlock, poppy and other such herbs, so compounded as to make a dose of conveniently small size, weighing only one drachma."

11. *Oeuvres completes d'Hippocrate*. On internal diseases, chapter 12. Littre, Paris, 1840-1849.

12. *Ibid*., On Women's Ailments, chapter 192.

13. *Ibid*., On the Nature of Women, chapter 58.

14. *Ibid*., On Epidemics II, chapter 118; On Diet, chapter 39; On the Nature of Women, chapter 33; On Women's Ailments, chapter 20.

15. We note that the contradiction between styptic and cathartic may be explained by the fact that the ancients used the term mekonion to include also the juice of the spurge (lat. *euphorbium peplus*). Pliny the Elder (A.D. 23-79). *NH* XX 76. 19. 53 states that the juice of the spurge and the poppy were given the same name (*mekonion*) by the ancient Greeks. He was the first to use the term opium for the juice of the poppy. He describes both products of the poppy, i.e. its juice - opium, the preparation of which he defines—and the extract of the poppy—the raw juice.

16. Aristotle, *Physica Minora*, 456B, 30; *Historia Animalium* I, 6276, 18.

17. Theophrastus, *op. cit.*, I 1.9.4. - 1.11.2. - 1.12.2. -4.8.7. snf 10. - 4.10.3. - 9.8.2., and II 2.12.1. - 4.15.2.

18. *Ibid*., I 9.11.9. - 9.12.3.

19. *Ibid*., I 9.12.4.

20. *Ibid*., I 9.12.5. - 9.16.8.

21. Alex Tschirch, *Pharmakognosie*, III/I, 1923, p. 645.

22. Theophrastus *op. cit.*, I 9. 8. 2. In the extract quoted above it is the juice of the poppy, i.e. opium, that is defined as *mekonion*.

23. *Fr. Hist. Gr*. II. 215, Fragment IX 3.

24. The Keian custom was euthanasia, practised on the island of Keos. It was practised in other areas also. Those who reached a certain age voluntarily put an end to their life by drinking poison after a ceremonial banquet; thus they avoided the illnesses and pains of old age. Cf. Valerius Maximus. II 6. 8, and Gabriel Welter, "Aristeides, Lawgiver of Keos", *Archaeological Journal*, 1953-1954, Vol. III, pp. 158-159.

25. Most writers mention hemlock as the means of euthanasia in Keos. However, as stated on page 4, Thrasyas of Mantineia affirms that a speedy and painless death can be obtained from the juice of the poppy or of hemlock, and this supports the use of the

poppy by the Keans, as aforementioned.

26. I. Thalysia, 157."Bearing sheaves and poppies in both hands". The use of the Doric form "*makon*" for "*mekon*" is obviously the origin of the modern popular name "*makos*" given to the poppy in many rural regions of Greece today.

27. Alex. Tschirch, *op. cit.*, III/I, p. 645.

28. Pedacii (read Pedanii) Dioscoridis Anazarbaei, *Opera quae exstant omnia*. Ed. by A. Wechel, p. 267. On the other hand, in other editions of Dioskourides it is stated that Diagoras says that Erasistratos disapproved of the use for ... (Pedanii Dioscuridis Anazarbei, *De Materia Medica*, I 64.6 (Ed. Max Wellmann, Berlin, 1958).

29. Dioskourides, *op. cit.*, I 64.6.

30. Alex Tschirch, *op. cit.*, III/I, p. 645.

31. *Nikandros (Nicander)*. (Edited by A. S. F. Gow and A. F. Scholfield, Cambridge, 1953), *Georgics*: Fragment 74, 11.43 seqq.

32. Nicander, *Alexipharmaca*, 11.431-436. We have a translation of this passage by Euteknios the Sophist (Nicander, *Editio Florentina ex Officina Moevckiana*, 1763, p. 430): "Those who drink the juice of the poppy which carries its seed in the head suffer as follows: they sleep deeply, a chill comes over their extremities, their eyes are closed, they perspire profusely ...".

33. Dioskourides, *op. cit.*, IV 64. 1 & 3.

34. *Ibid*., IV 65. 1-7.

35. *Ibid*., IV 65. 7.

36. *Ibid*., IV 66.

37. *Ibid*., IV 67.

38. E. I. Emmanuel apud Alex Tschirch, *Pharmakognosie*, Vol. I/III, Leipzig 1923, p. 1309 and independently. A comparative study of the plant drugs portrayed in the Constantinopolitan Code.

39. Claudii Galeni, *Medicorum Graecorum opera quae exstant*, Leipzig, 1826.

40. *Ibid*., Vol. XII 72.

41. *Ibid*., Vol. I 548.

42. *Ibid*., Vol. XIII 272.

43. *Ibid*., Vol. XII 72.

44. *Ibid*., Vol. XIII 273.

45. Nicander in *Athenaios* XV 683-684a (Ed. Kaibel, 1962) and Nicander's *Georgics*, frag. 74 11. 43. Cf. footnote 31 above.

46. "Within the Altis stand the Metroon and a circular building called the Philippeion; on the summit of the Philippeion there is a bronze poppy holding the beams together". (Pausanias V 20.9).

47. "It is made of gold and ivory; on the goddess's head is a globe, and in one hand she holds a poppy, and in the other an apple" (Pausanias II 10. 5).

48. Alex Tschirch, *op. cit.*, III/I, p. 645.

49. Pliny *NH* XX 77.

50. It is also called *euphorbia peplis* by some.

51. *Georgics*

52. P. G. Kritikos, "Der Mohn, das Opium, u. ihr Gebrauch im Spaetminoicum III, Bemerkungen zu dem gefundenen Idol der Minoischen Gòttheit des Mohns", *Archives of the Academy of Athens* 1960, pp. 54-73, and independently.

53. S. Marinatos, "The Minoan goddesses of Gazi", *Journal of Archaeology* (Greece) 1937, Vol. I, pp. 278-291, and S. Alexiou, *The Minoan goddess with uplifted hands*, Doctoral thesis, copy from Vol. XII of the *Cretan Chronicles*, 1958, pp. 179-299, and independently.

54. See also footnote 52 above.

55. S. Marinatos, *Arch. Journal*, 1937. Vol. I, p. 284, fig. 6.

56. Alex Tschirch, *Handbuch der Pharmakognosie* I/III, 1932, p. 1933, fig. 746.

57. Alex Tschirch, *op. cit.*, Vol. III/I, 1923, p. 631.

58. On a container of coca leaves from an ancient Peruvian tomb we have a similar portrayal of a smile. This container represents a head revealing a closely similar smile as coca leaves are being chewed. It is known that coca leaves were widely used during religious ceremonies by the inhabitants of Peru. See fig. 3: Container of coca leaves from a Peruvian grave Tschirch).

59. Christian Zervos, *L'art de la Crète*, Paris, 1957; figures 739 and 740.

60. *Ibid*., p. 47.

61. *Arch. Journal*, 1904, pp. 29-31, fig. 7, and P. Jacobsthal, *Greek Pins and their Connections with Europe and Asia*, 1956, p. 1, fig. 2.

62. Christian Zervos, *op. cit.*, p. 47.

63. S. Marinatos, *Arch. Bulletin* 11, 1927-1928, p. 78.

64. R. S. Merrillees , "Opium Trade in the Bronze Age Levant", *Antiquity* 36, 1962, pp. 287-292.

65. The Bronze Age begins c. 1500 and extends to 1100 B.C.

66. Dating from the end of the fifteenth century B.C. (XVIIIth Dynasty, and later).

67. Walter Hahland (*Neue Denkmaeler des attischen Heroen u. Totenkultes*, Berlin 1954, p. 187) agrees that certain vases presumed to have been modelled on the fruit of the pomegranate were actually modelled on that of the poppy, as, e.g., two in the National Museum at Naples (Johansen, *Les vases Sicyoniens*, plate VIII, 3).

68. R. S. Merrillees, *op. cit.*, p. 290.

69. Saber Gabra, "Papaver Species and Opium through the Ages", *Bulletin de l'Institut d'Egypte*, 37, 1956, pp. 39, 45 and 46.

70. *Ibid*., pp. 43 seqq.

71. E. Sciaparelli, *La Tomba Intatta dell' Architetto Cha nella Necropoli di Tebe*, Torino, 1927, p. 154.

72. Documents Nos. 108/36 dated 21/1/64 and 108/36 dated 8/2/64 of the Department

of Antiquities at Nicosia. Photographs supplied by B. Karagiorgis, Director of Antiquities, Cyprus.

73. *BCH* 84, 1960, p. 271; Chronique des fouilles à Chypre en 1959, fig. 45.

74. P. Jacobsthal, *op. cit.*, p. 38.

75. Arthur Evans, *The Palace of Minos*, Vol. II, Part I, London, 1928, Fig. 194a, p. 341. See also S. Marinatos , *The Creto-Mycenaean Religion*, Athens, 1948, pp. 82-83. M. P. Nilsson, *The Minoan-Mycencean Religion*, London, 1950, p. 347, fig. 158.

76. P. Jacobsthal, *op. cit.*, figs. 140, 141.

77. G. Karo, *Schachtgraeber von Mycenae*, Munich, 1930/33, plate XXXI, fig. 103.

78. P. Jacobsthal, *op. cit.*, fig. 139.

79. *Archaeological Journal* 1889, p. 150, plate 7/4. The pin is at the Archaeological Museum in Athens among the Vaphio exhibits, sub. No. 1814.

80. Information communicated personally by Professor Marinatos.

81. Ch. Waldstein, *The Argive Heraeum*, p. 37 (197), plate XLVI No. 16, p. 34 (172) plate XLVI, No. 4 and p. 34 (163), plate XLVI, No. 3.

82. Pausanias II 17.5 & 10.5.

83. Ch. Waldstein, *op. cit.*, p. 112, plate LVII, fig. 5; p. 210, plate LXXVIII and LXXIX, Nos. 184 and 184a.

84. Ch. Dugas, *Le Sanctuaire d'Alea Athena a Tegee avant le IVe siecle*, *BCH* 45, 1921, pp. 384-385, fig. 45.

85. G. Oikonomos, "The Worship of Athena Nike on the Acropolis", *Archaeological Society*, 1939-1941, p. 104.

86. Arch. Anz., 37, 1922, 15.

87. G. Oikonomos, *op. cit.*

88. Dugas, *op. cit.*

89. Berytus 9, 1949, 85; v. also P. Jacobsthal, *op. cit.*, p. 185.

90. Corinth XV i, plate 49, fig. 40, and Ch. Dugas, *op. cit.*; pp. 378-9, figs. 40, 41.

91. Ch. Dugas, *op. cit.*, pp. 369-372 (Nos. 99, 97 and 81).

92. Cf. p. 19 of the present study.

93. R. M. Dawkins, *The Sanctuary of Artemis Orthia at Sparta*, London, 1929.

94. *Ibid*., plate CLXXIX, fig. 6. Cf. S. Cabra, *Bulletin de l'institut d'Egypte* 37, 1956, p. 42, fig. 4.

95. R. M. Dawkins, *op. cit.*, plate CXXXV.

96. *Ibid*., plate LXXXIX, h.

97. BSA 15, 1908-9, p. 148, plate IX, 15, 17.

98. *Ibid*., p. 142, plate VIII, 9.

99. P. Jacobsthal, *op. cit.*, figs. 514, 515.

100. Cf. p. 19 of the present study.

101. S. Marinatos, "The Creto-Mycenaean Religion" (Mimeographed lectures), p. 85 (Athens, 1948). He thinks it probable that as Athens received its name after the goddess Athene, so Mycenae may have been named for a hypothetical goddess Mykene, and Mekone for some forgotten goddess, Mekone (pp. 131, 132).

102. Cf. pp. 21, 22 of the present study.

103. N. Verdelis, *Archaeological Journal*, 1956; Chronica, p. 10; and Archaeology, 1962, p. 190.

104. We thank Mr. N. Verdelis for the photograph of the statuette, and we append an extract from his remarks concerning it: "A bronze statuette of a man standing, representing a shepherd or peasant according to the known type of Arcadian statuettes. It was found in 1962 at Triantaphyllia, about 5 kilometres to the south of ancient Pheneos (now the village of Kalyvia). It is now in the Nauplion Museum, Exhibit No. 13874...".

105. Corinth XII, plate 118, Nos. 2292, 2291, 2293, 2294, 2295 and 2296.

106. Gabra, *Bulletin de l'Institut d'Egypte*, 37, 1956, p. 43, fig. 4.

107. Payne, Perachora, *The Sanctuary of Hera Akraia and Limenia*, plate 188, A 288-290, 293, 298, 307, plate 798, 16-18.

108. *Ibid*., plate 188 A 315.

109. G. P. Oikonomos, *BCH* 70, 1946, pp. 403-417.

110. *Ibid*., p. 410.

111. Hesperia, Suppl. II, p. 129, fig. 92 (Athens, 1959).

112. Cf. p. 21 of the present study.

113. Cf. p. 20 of the present study.

114. G. Daux, "Chronique des fouilles et decouvertes archeologiques en Grece en 1960", *BCH* 85, 1961, p. 777, figs. 8 and 9.

115. We note that the poppy (*mekon*) is still known today in Macedonia under the name "*makes*", derived etymologically from the Doric form *makon*.

116. P. Jacobsthal, *op. cit.*, p. 3, fig. 8.

117. Schmiedeberg, *Uber die Pharmaka in der Ilias u. Odyssee*, Strasbourg, 1918.

118. Woering, *Die Pflanzen des alten Aegypten*, Leipzig 1886, pp. 225-226.

119. Cf. Saber Gabra, "Papaver Species and Opium through the Ages", *Bulletin de l'Institut d'Egypte* 1956, p. 40; and H. R. Hall, *Journal of Egyptian Archaeology* 14, 1928, pp. 203-205.

120. S. Gabra, *op. cit.*, p. 40. With regard to the above observation we note that morphine, a component of opium, was unknown; hence its discovery in the ointment presupposes the presence of opium therein.

121. *Ibid*., p. 41.

122. *Ibid*., p. 38.

123. They call the capsules *sheppen* and the flowers *shepenndshr*.

124. S. Gabra, *op. cit.*, p. 54.

125. *Ibid*., p. 45.

126. The Sumerians lived in the area between the Tigris and the Euphrates in the lower half of present-day Iraq. They flourished from the fourth to the third millenium B.C. and developed great proficiency in the arts, agriculture, and sciences in general. The Sumerians were responsible for the first written records (discovered by the University of Pennsylvania Mission) in the form of white clay tablets of varied content (economics, politics, law, literature, ethics, zoology, botany, medicine, pharmaceutics, etc.).

127. H. J. Anslinger and W. F. Tompkins, *The Traffic in Narcotics*, New York 1953, p. 1.

128. C. E. Terry, *The Opium Problem*, New York 1928, p. 54.

129. The Babylonians developed a great civilization as is evident from their very ancient monuments (cf. A. Tschirch, *op. cit.*, 1933, I/III, p. 1190). A picture of this civilization is given by the Kujundschik library belonging to the neo-Assyrian period, and composed of 22,000 tablets of white clay. These were excavated by Layard and are now in the British Museum. They formed the Assyrian library of King Sardanapalus (Ashurbanipal, 668-626 B.C.) in his capital at Nineveh. Reginald C. Thompson studied the tablets (*Assyrian Herbal*, London, 1924, pp. 46, 251, 261 and 269). He states that they are copies of older texts, deducing this from their similarity to the medical tablets found at Ashur and dated a few centuries earlier. In a catalogue of the 115 commoner plant drugs mentioned, opium occurs forty-two times and holds the thirty-third place as regards frequency of mention.

130. Glenn Sonnedecker, "Emergence of the Concept of Opiate Addiction", *Journal mondial de Pharmacie*, 3, 1962, 277.

131. C. E. Terry, *op. cit.*, p. 54, and G. Sonnedecker, *op. cit.*

132. C. E. Terry, *op. cit.*, p. 54.

133. Lectures by Professor Marinatos, "Creto-Mycenaean Religion", 1948 pp. 84, 85.

134. C. E. Terry, *op. cit.*, p. 54.

135. A. Tschirch, *Handbuch der Pharmakognosie* III/I, Leipzig, 1923, p. 647.

136. A. Tschirch, *op. cit.*, I/III, 1933, p. 1208.

137. *Ibid*., p. 1209.

138. Winifred Walker, *The Plants of the Bible*, London 1959, p. 88.

139. M. Bergmarck, *Lust und Leiden durch Drogen*, Stuttgart, 1958, p. 48.

140. A. Tschirch, *op. cit.*, III/I, 1923, p. 648.

141. *Ibid*., p. 647.

The History of the Poppy and of Opium and Their Expansion in Antiquity in the Eastern Mediterranean Area

Part Two. From the journal *Bulletin of Narcotics* 19(4) 1967 pp. 5-10.

by P. G. Kritikos and S. P. Papadaki

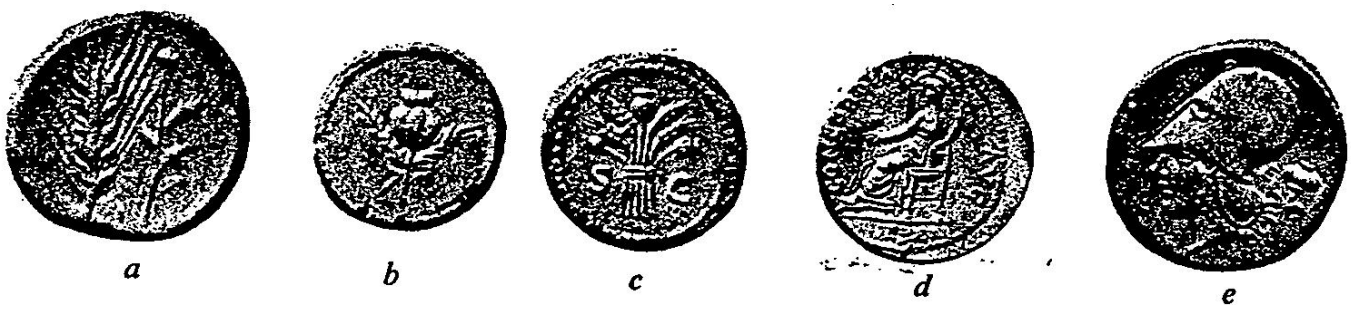
Translated from Greek
by George Michalopoulos

IV. The Poppy as an Emblem on Coins

Footnotes

The poppy, both in plant and in capsule form, appears on various coins of the Greek and Roman period.

We append illustrations of a few coins which testify to the use of the poppy as a symbol of various divinities [142] (Fig. 30).



Thus, on a coin of Ankyra Phrygia [143] (2nd century A.D.) the poppy-head is shown with two cornears (Fig. 30b); on the reverse of another coin from Ephesus [144] (79-81 A.D.), Concord is shown holding two wheat-ears and a poppy in her right hand and a cornucopia in her left (Fig. 30d).

On a Metapontian coin [145] the poppy is also shown with a wheat-ear (Fig. 30a).

30. Coins depicting the poppy capsule

On the reverse of a Roman coin [146] (81-96 A.D.)-on the observe of which is a profile of the wife of the Emperor Domitian represented as Demeter crowned with ears of wheat-three poppy-heads appear in a bunch of wheat-ears (Fig. 30c).

On another coin bearing the head of Athena we find a poppy-head as a complementary symbol; [147] (Fig. 30e).

V. Etymology and Popular Nomenclatures

A. *Mekon* and *makon* (Doric)

The etymology of the name is not certain.

In the *Great Etymological Dictionary* [148] it is stated that "the plant *mekon* is so called because of its length (*mekos*)." We find this etymology extremely dubious.

According to Nicander [149] "the *mekon* is so called from *me konein* (not to raise dust), that is to say, not to be active," and further [150] "the etymology of *mekon* is derived from *me akonein*, as the saying goes, that is, not to cause a bowel movement."

According to Frisk, [151] the root of the word is of Slavic or Germanic origin. Thus in Russian it is termed *mako* and in German *mago*.

B. *Mekonion* (Latin *meconium* or *meconeum*)

Derived from *mekon* and denoting a substance pouring or squeezed from it.

C. *Papaver* (more anciently *papauer*)

The word is found chiefly in the Latin authors (Cato, Pliny the Elder, Celsus, *et al.*). It is not found in earlier Greek writers, but occurs in Dioskourides and the later writers as the Latin term for the poppy.

Thompson [152] states that it is derived from the Assyrian name for the juice of the poppy, *Arat. Pa. Pa.*, which is found in the *Assyrian Herbal*. This interpretation is not supported by any subsequent continuity of evidence. The name is not repeated in later records; moreover it applies only to the juice and not to the plant.

XV, 1932, 1. 2434.

D. *Opion* (*opium*)

The word is first found in works of the first century A.D. Clearly the view is correct that it is derived from the Greek word *opos* (juice), and was transferred to Latin in the form of *opium*. It occurs in this form in Pliny the Elder and subsequent authors, and is found thus in Chassinat's Coptic medical papyrus.

On the other hand Galen's etymological interpretation taken from Philo, according to which it is

derived from the article *o* and the word *pion* (rich milk), is very dubious.

Aphioni (modern Greek = opium) may have Persian origin.

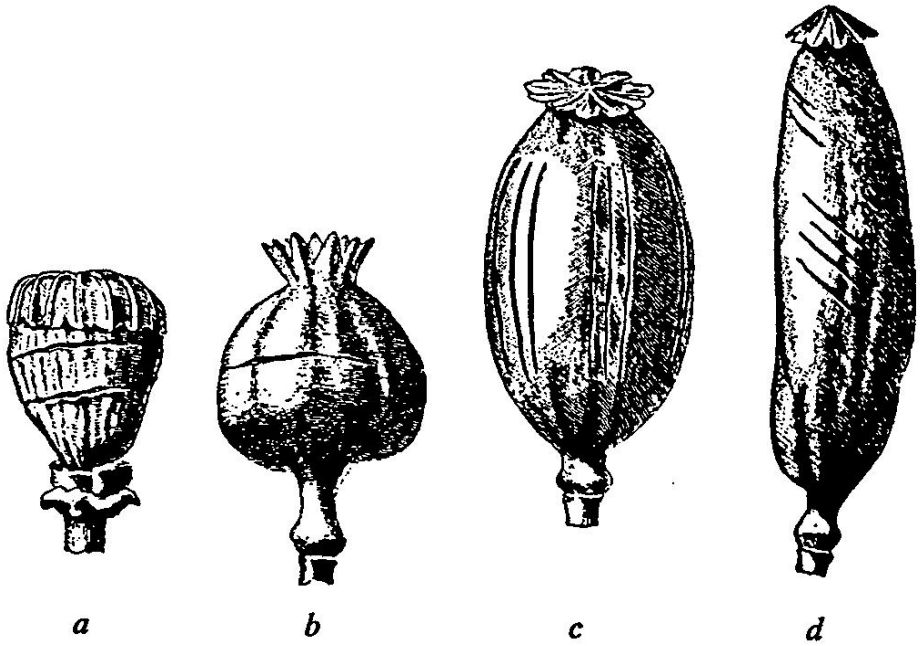
Hypnos and *Hypno* (modern Greek) so called because it induces sleep.

VI. Method of Extracting Opium

It is known that the extraction of opium was made through the years by slitting the capsule vertically, horizontally, by circular notches, or slanting cuts.

The illustrations appearing below show the various types of notching (Fig. 31). We shall use them in drawing our conclusions on this point.

31. Various methods of notching the poppy capsule (Wasicky)



A comparison of methods of notching recorded in the texts and shown in archaeological finds leads to the following deductions:

The more ancient method of notching was the vertical one. This is shown by the notches on the capsules of the goddess of Gazi, by the earlier of the Cyprian vases, and by the various imitations of notched capsules in the form of pins, pendants, ear-rings, etc. found in all regions of Greece and Egypt. This method is still evident in most of the later archaeological finds.

The poppy and opium in antiquity (eastern Mediterranean area) [7]

Some pin-heads show circular slits corresponding to type (a) capsule-notching (Corinthian and other pins).

We have not been able to gather information regarding the method of notching employed by the Sumerians, Assyrians and Persians.

Dioskourides mentions, on the one hand, a circular notching at the top of the capsule, and on the other, a vertical notching on the lower section thereof.

Finally, the slanting notches (type d) are found neither in the texts nor in archaeological finds, with the exception of the Cyprian vases with pronged base II, discovered in Egypt. If we accept Merrillees's view, the slanting lines thereon represent slanting capsule-notches.

It is certain that in the region of Asia Minor [153] the three methods of notching are found in later years, and this is perhaps an indication that the third type may have been known in antiquity in this region, adjacent to Cyprus, and continued into later times.

On the other hand, the vertical method of notching has been maintained in India down to the present century. A detailed investigation might possibly show that this method of notching has been continued uninterruptedly from more ancient times, and that it may be associated with the advent of the armies of Alexander the Great bringing with them the process of notching the poppy-capsule practised in Macedonia.

Finally, we note that Pliny the Elder, possibly misinterpreting Theophrastus's statements about opium extraction, reports that opium was also extracted from the stalk.

VII. Methods of Taking Opium

It appears evident that opium was used in ancient times:

1. By inhalation of its vapours (through the nostrils);

2. Internally as a hypnotic and narcotic, taken in the form of a variety of preparations of the capsule or of opium: juice (mekonion), tablets, and other confections (diakodion);

3. Anally by means of suppositories;

4. Externally in the form of unguents and poultices, lotions for diseases of the eye, and liquids for earache;

5. As a means of euthanasia in combination with hemlock (the Keian custom);

6. In some forms also as a means of suicide.

We propose to devote attention chiefly to the use of opium by nasal inhalation, as reported in the texts, inasmuch as this is directly connected with the study of relevant archaeological finds.

The method of smoking opium in a pipe as practised in modern times is not necessarily the one practised in antiquity.

In a previous study [154] we wrote that the ancient method probably consisted in throwing the opium on to a hot clay tile or plate. Since no opium-smoking pipe has been found to this day, we based our judgment on the discoveries at Gazi, among which were the receptacle shown in Fig. 2 (similar to that found in Java) the disc belonging, according to Professor Marinatos, to the equipment of the goddess, and the coals which were found on the floor of the building.

Specifically as regards the open and closed pipes found in Cretan excavations:

Open pipes. (a) These were probably placed, as is popularly done today, over braziers, so that they were kept alight by a current running from bottom to top. In such cases, if a stone or tile were placed on the coals, and when it was well heated the opium were poured upon it, then its vapours would emerge concentrated from the upper mouthpiece without any overflow drip. Thus they would be more satisfactorily inhaled.

Probably on the pipe placed over the fire in the above-mentioned manner a tile would be placed on which, when well heated, opium would be poured; the vapours rising from it would be absorbed by nasal inhalation.

Closed pipes. As these have holes in the lower lateral section it may be presumed that:

1. Lighted coals or a burner were placed within them, upon which a tile was placed. By pouring opium upon it, concentrated vapours would issue and be inhaled through the open end; a current of air would form, coming through the holes and flowing upward.

2. The tile was not placed on the coals or the burner but on the open mouth-piece where it would become hot, and the opium would be poured on it and inhaled.

In support of this theory we may cite the metal head found on some pins. In many cases this head is in the shape of a capsule, often notched. The theory is further supported by the phrase found in the texts concerning the nasal inhalation of opium. Smoking through a pipe is not mentioned. p. 24. Vol. XIX, No. 3.

We suggest to archaeologists that it might be interesting to find out whether the long metal pins (too long to warrant their use for attaching clothing or pinning up hair) were used as instruments for carrying the opium to the source of heat and producing vapours, as is done today. If so, it would be natural to use metal pins (needles) of greater length than those used today in order to insert the opium in the pipe for direct heating and vapour inhalation.

Against this theory two facts may be adduced:

1. The existence of bone pins with notched capsuleheads (cf. Corinth and elsewhere);

2. The discovery in graves of long iron pins with traces of cloth attached.

A detailed search for further information on the subject should yield positive conclusions on the problem of these pins. If so, the Gazi tray and pipes might be considered as instruments used for

this purpose.

No information has come down to us regarding the method of opium smoking practised in antiquity, possibly because the use of the drug, primarily euphoric, remained hidden behind the walls of sanctuaries, where many capsule-shaped objects have been found.

Perhaps opium vapours were used at prophetic shrines in the process of inducing vaticination. Such a use of opium may provide the reason why physicians of classical antiquity did not describe the method of taking opium "by nasal inhalation".

VIII. Nepenthes

It may be useful at this point to give our views concerning nepenthes, since we consider that it is directly related to the poppy.

This drug, mentioned by Homer, has preoccupied many scholars, ancient and modern.

Basing themselves on Homer's passage, Sprengel [155] and others believe that he refers to the juice of the poppy. On the other hand, Nicolas Monardes [156] thinks that it is a kind of hashish. Several other writers [157] identify it with various other plants (*helminthia echioides*, *elecampane*, *inula*, coffee, etc.). Others, including Plutarch, Athenaios and Philostratos, believe that no actual drug is concealed in the term "nepenthes," which allegorically represents Helen's charm and fascination. Theophrastus either did not know of or doubted the existence of nepenthes, attributing it to a poet's imagination.

Lewin [158] identified nepenthes with opium, holding that the Greeks and Cretans were familiar with the poppy and used it. Similarly Wallnöffer and Rottauscher state that Homer informs us that Helen used a "juice of opium." [159] This however cannot be gathered from Homer, who merely mentions nepenthes.

According to Snijder, [160] many writers claim that nepenthes was a preparation of henbane, and that Dioskourides (IV 68.3) states that this has a greater and better effect than the juice of the poppy. He himself, however, advances the opinion that nepenthes was probably a mixture of opium and henbane inasmuch as magic philtres are seldom "simple," and usually "concoctions."

As regards Anslinger and Tompkins's statement [161] that Homer writes in the Odyssey that Helen used an infusion of poppy, we must observe that the poet nowhere mentions any infusion. As stated above, many scholars consider nepenthes to have been a preparation containing opium.

Similarly, we note that Homer's description does not refer to the poisonous effects of the drug; it is purely representative: Gorgythion struck down by Teucer sank into death bending down his head as the poppy in a garden, laden with fruit, bends its head (under its weight).

Professor Marinatos in a recent publication [162] suggests that possibly the plants in the birds' beaks pictured on a bowl found at Pylos (koukounara) may be identified with "the pain-removing

drug nepenthes."

In our opinion, the view that nepenthes has no connexion with an existing drug—a view deriving from Theophrastus's statement that it was a poet's imaginary creation—is not well founded.

Furthermore the interpretation offered by some to the effect that nepenthes cannot be an opiate because of its bitterness, which precludes its being easily and agreeably taken, and because opium was not known at that time, is devoid of foundation, for the following additional reasons:

1. Homer definitely states that Helen was introduced to nepenthes by Polydamna of Egypt, where the "life-giving earth bears many drugs." It must therefore have been an actual drug, and one derived from a plant.

2. Diodorus Sikeliotes (Diodorus Siculus) repeats the foregoing, and adds that today Egyptian women use it, because only the women of Diospolis possess the knowledge derived from high antiquity of this drug.

The poppy and opium in antiquity (eastern Mediterranean area) [9]

3. When mixed with sweet wine its bitter taste is mitigated.

4. In the light of all that has been set forth, it is evident that opium, which was earlier thought to have made its appearance in the fourth/third centuries B.C., was already known much earlier than Helen's time in Crete, in Cyprus, in Egypt, among the Sumerians and among the Assyrians; among the last-named the poppy was known as the "joy-plant," as was opium also, according to some authorities.

5. The poppy-capsule, notched, was known to Helen as is made evident by the finds both at the Menelaion in Sparta and at the temple of Artemis Orthia, upon which finds the poppy capsule is portrayed.

6. The identification of nepenthes with hashish is not tenable, because the latter was already being taken by inhalation (Herodotus), and not processed in wine.

From the foregoing data it may be deduced that nepenthes can only be opium. Possibly it might not have been known to Theophrastus and some other ancient writers because its use remained a secret of the sanctuaries revealed to only a few.

IX. Symbolic Meaning of the Poppy

The symbolic meaning which the ancients attached to the poppy is of especial interest.

Various scholars consider that plenty and fertility are symbolically represented by the appearance in the hands of statues of gods and goddesses of the capsule or the poppy itself, alone or combined with ears of wheat, or in the form of a garland composed either solely of poppies or of

poppies combined with wheat-ears.

Oikonomos considers the combination of the poppy with wheat-ears as the principal characteristic symbol of Demeter, and this because the goddess is *par excellence* the goddess of agriculture; he further mentions that, as may be seen from the relevant passage in the Thalysia of Theocritus, a picture is given of the goddess bearing happiness in both hands.

The same goddess is considered to be a goddess of healing also.

Professor Mylonas, writing about the Mycenae ring, states that an agricultural goddess is represented on it. The identification of the goddess with Demeter is not, however, convincing, because in the prehistoric era in rural districts a goddess known as the goddess-mother or goddess of nature was worshipped, and it is not easy to identify the agricultural goddesses of that era with those of the historic age. Seeing that the worshippers offer poppy-capsules, which have been identified as symbols of agriculture, this goddess must be assumed to be one of the agricultural goddesses.

Writing further about the Gazi goddess, he states that, in accordance with Professor Marinatos's observations, the plant has medicinal properties; hence the poppy must be defined as a medicinal symbol, and the goddess as a goddess of cures. He insists that she cannot be Demeter, since she is associated with the double axe, which is not connected with that goddess.

Christian Zervos [163] writes that the poppy must be added to the list of the sacred plants of the Minoans and that its fruit was considered by them to be a symbol of immortality, and furthermore that the goddess of the Dead puts mortals to sleep at the end of their life, before hiding them beneath the earth, in order to awaken them to a new existence.

One may discern in this observation an analogy to the symbolism of the Eleusinian Mysteries regarding death, burial, and a resurrection in a new life—one relating to the life cycle of plants and beings generally.

As regards the Gazi goddess, named by Professor Marinatos "the goddess of the poppy, symbol of healing" because of the properties of the poppy, we have already suggested that since this goddess is shown in a state of ecstasy, she should be called "the goddess of ecstasy."

Among the Sumerians the poppy must have been regarded as a symbol of joy and exultation, as indicated by its name "Hul Gil," meaning "plant of joy."

We venture, however, to put forward the view that the symbolic meaning of the poppy, or more precisely of its capsule, varies each time according to the nature of the divinity portrayed.

Thus, in the hands of the prehistoric goddess-mother, agricultural deities, and in part of the later goddesses Hera, Demeter and Aphrodite, it can be regarded as symbolic of plenty (wealth) and fertility.

Specifically as regards the goddess-mother and Hera, who were protectresses of infants, we

consider that the outstanding property of the poppy-capsule was therapeutic owing to its hypnotic qualities. Thus, representations of capsules are dedicated to the goddess-mother at Solygeia, and the figurines so dedicated bear capsule-shaped pendants and adornments.

It is the pomegranate, with which the poppy is often confused, that was the symbol of fertility and so continues to this day.

In our view, many symbolic associations can be linked to the poppy:

1. That of life or wealth by reason of the oil taken from its multitude of seeds;

2. That of healing, because of its narcotic, hypnotic, and general curative properties;

3. That of euphoria, voluptuous ecstasy, and increased fertility;

4. That of sleep and death, which can be induced by the plant.

In all cases where the three capsules appear (Gazi goddess, Mycenae ring, Lovatelli hydria, *et al.*), they imply the multiple symbolic meanings listed above, corresponding to the multiple attributes of the goddess (life or wealth, therapy and well-being, and, by extension, fertility).

As regards the goddess Demeter, we are of the opinion that the poppy capsule (not the plant), found in conjunction with ears of wheat in the goddess's hands, is not symbolic of life, plenty, wealth and fertility, represented by the wheat-ear, but of health, because of the capsule's therapeutic properties. The two symbols combined betoken the goddess as the protectress of life (wheat-ear) and of health (poppy-capsule).

A confirmation of the above is plausibly suggested by the Orphic hymn on Eleusinian Demeter where we read: "The queen plentifully endowed with the fruits of the harvest, bearer of peace and blessed orderliness, and of wealth, the dispenser of well-being, and of health as well."

According to Greek mythology, the hypnotic properties of the poppy were known to the goddess (she ate poppies in order to sleep and to forget her grief at the rape of her daughter, and she gave poppies to Triptolemus to bring him sleep).

Moreover, Demeter is held to be among the healing deities. In some cases, next to her appears the Snake, a chthonian symbol, and later an attribute of Asklepios and the healing deities. Kern [164] refers to the goddess Demeter as a healing deity, to whom in fact offerings of poppy-capsules were made as a token of gratitude for the cure of an eye disease, probably because of the use of some poppy preparation as treatment for eye trouble.

Furthermore, we would again draw attention to one scene in the decoration of the Lovatelli hydria where three poppy-capsules are offered on a plate, whereas the whole decorative display shows incidents of the cleansing of Herakles, or, according to some scholars, stages in the initiation ceremonies of the Eleusinian Mysteries, in which knowledge of the poppy's properties surely played an important part.

In the hands of Apollo, Asklepios [165] and the gods of medicine, the poppy-capsules are clearly symbolic of the curative qualities of the plant, seeing that these gods were the special protectors of medicine.

In the hands of Pluto, Persephone, and the gods of Hades, the poppy portrayed on funeral monuments or found in graves is symbolic of death, owing to its lethal properties, known to classical writers who mention that its juice induces a swift and painless death.

The same symbolic meaning may be attributed to the poppy when held by statues of the gods of Sleep and Night, children of Death, because of its hypnotic properties.

Of especial interest is the symbolic meaning of the poppy-capsule in the hands of Aphrodite, goddess of pleasure and fertility. In this instance, the symbolic meaning is based principally on the pleasure and, by extension, the fertility derived from the poppy.

We have already seen that the use of the poppy and of opium was widespread in regions where Aphrodite was worshipped most devoutly (Cyprus, Corinth, Mekone or Sikyon, *et al.*), and this reinforces the foregoing views. This goddess was worshipped more anciently in different places under different names.

Note by the Editor

The statements made in both Parts of this article (Volume XIX, No. 3, p. 38, and above on p. 7) asserting that opium may have been introduced in India with the invasion by Alexander the Great (327 B.C.) will attract considerable attention. The first recorded cultivation of the opium poppy in India dates it to the XVth century, and it is mentioned in the annals of the reign of the Moghul Emperor Akbar the Great, in the Ain-i-Akbari (late XVIth century). Bensussan suggests (p. 191) that opium was introduced into India most likely in the VIIIth century after the Arab invasion of the province of Sind, and that claims that opium was grown in the country in archaic times are not based on any "rigorous documentation."

The *Bulletin* invites the attention of scholars to this controversy, and would be interested in contributions on this aspect of the history of opium.

The History of the Poppy and of Opium and Their Expansion in Antiquity in the Eastern Mediterranean Area, Part II

by P. G. Kritikos and S. P. Papadaki

---

142 For details as to the symbolic meaning of the poppy, see chapter IX.

143 M. O. Bernhard, *Pflanzenbilder auf griechischen u. romischen Munzen* (Zurich, 1925), p. 29 plate III, fig. 17.

144 *Ibid*., fig. 19.

145 *Ibid*., fig. 16.

146 *Ibid*., fig. 18.

147 *Ibid*., fig. 20.

148 *Great Etymological Dictionary*, 583, 58.

149 Commentary on Nicander, *Alexipharmaca*, 1. 433, cf. RE2.

150 *Ibid*., 444.

151 Hjalmar Frisk, *Griechisches Etymologisches Wörterbuch*, II, (Heidelberg, 1963), p. 255. Also cf. A. Carnoy, *Dictionnaire étymologique des noms grecs de plantes* (Louvain, 1959), p. 172.

152 Cf. p. 39, 40 of the present study.

153 A. Tschirch, *Pharmakognosie*, III, 1923, p. 631. Bernhard (*Pflanzenbilder auf griechischen u römischen Münzen*, Zürich, 1925, p. 29) states that Demeter found the poppy at Mekone in Lykaonia (Asia Minor).

154 P. G. Kritikos, *Der Mohn, das Opium u. ihr Gebrauch im Spaetminoicum III. Bemerkungen zu dem gefundenen Idol der Minoischen Gottheit des Mohns*, Archives of the Academy of Athens, 1960, p. 21.

155 Sprengel, *Geschichte der Botanik* I, 1817, p. 38.

156 Cf. Emm. Emmanuel, *Homer's Nepenthes*, Minutes of the Academy of Athens, 1952, pp. 541-553.

157 *Ibid*.

158 Lewin, *Phantastica*, pp, 41 *et seqq*. Cf. G. A. Snijder, *Kretische Kunst*, Berlin, 1936, pp. 139-140.

159 Wallnöffer-Rottauscher, *Der goldene Schatz der chinesischen Medizin* (Stuttgart, 1959), p. 76.

160 G. A. Snijder, *op. cit.*

161 H. J. Anslinger and W. F. Tompkins, *The Traffic in Narcotics* (New York), 1953, p. 1.

162 S. Marinatos, *Some Hints about Eastern Mediterranean Mythology*, AE 1964, p. 7.

163 Christian Zervos, *L'Art de la Crète*, 1956, p. 47.

164 Otto Kern, *Archaiologike Ephemeris*, 1892, pp. 114-118.

165 Oskar Bernhard, *Griechische u. römische Münzbilder in ihren Beziehungen zur Geschichte der Medizin*, 1926, p. 33.